



Conformity Analysis and Determination Report

2035 Long Range Transportation Plans:

- **Burlington-Graham Metropolitan Planning Organization (Guilford County)**
- **Greensboro Urban Area Metropolitan Planning Organization (Guilford County)**
- **High Point Urban Area Metropolitan Planning Organization (Guilford, Davidson and Forsyth Counties)**
- **Winston-Salem Urban Area Metropolitan Planning Organization (Forsyth and Davidson Counties)**

**November 1, 2012
Report**

Prepared by:

The Piedmont Authority for Regional Transportation,

In Partnership with the:

**Burlington-Graham Metropolitan Planning Organization,
Greensboro Metropolitan Planning Organization,
High Point Metropolitan Planning Organization,
Winston-Salem Metropolitan Planning Organization,**

and

In cooperation with

The North Carolina Department of Environment and Natural Resources
Division of Air Quality

and

The North Carolina Department of Transportation - Transportation Planning Branch

Contact Information

Additional copies of this report can be obtained from the:

**Piedmont Authority for Regional Transportation
7800 Airport Center Dr., Suite 102
Greensboro, NC 27409
www.partnc.org**

or

**North Carolina Department of Transportation
Transportation Planning Branch
1554 Mail Service Center
Raleigh, NC 27699-1554**

TABLE OF CONTENTS

CONFORMITY ANALYSIS AND DETERMINATION REPORT	
OVERVIEW	1
EXECUTIVE SUMMARY	3
1 INTRODUCTION.....	7
2 AIR QUALITY PLANNING	12
• 2.1 Emissions Budget and Baseline Emissions	12
3 LONG RANGE TRANSPORTATION PLANS.....	13
• 3.1 Consultation	13
• 3.2 Financial Constraint Assumptions	13
• 3.3 Latest Planning Assumptions	13
• 3.4 Future Year Roadway Projects	14
• 3.5 Transit Networks	15
• 3.6 Congestion Mitigation/Air Quality (CMAQ) Projects	16
• 3.7 Travel Demand Model	16
• 3.8 Mode Split / Mode Choice	17
• 3.9 Method of Reporting VMT and Speed	18
4. REGIONAL EMISSIONS TEST.....	18
• 4.0.1 Sub-area motor vehicle emission budgets	18
• 4.0.2 Emissions analysis source	18
• 4.0.3 Emission comparison Years (CO)	19
• 4.0.4 Emission comparison Years (PM2.5)	20
• 4.1 Emission Model	20
• 4.1.1 Development of Emission factors	20
• 4.2 Transportation Conformity Measures	22
• 4.3 Emission Comparison Test by location and Pollutant	22
• 5. PUBLIC INVOLVEMENT AND INTERAGENCY CONSULTATION.....	25
6. CONCLUSION.....	26

List of Appendices

(All contained in electronic format)

Appendix A: Triad Area Federal Register Notices

- CO SIP
- PM2.5 SIP

Appendix B: Interagency Consultation

- 3/23/12
- 4/20/12
- 5/18/12
- 6/15/12
- 7/20/12
- 8/17/12
- 9/21/12
- 10/19/12
- Triad TCPCP

**Appendix C: Lists of Roadway and Transit Projects
(within Nonattainment and Maintenance Areas)**

- C1: Greensboro Urban Area MPO 2035 LRTP Projects
- C2: Greensboro Urban Area MPO 2012-2018 TIP
- C3: High Point Urban Area MPO 2035 LRTP Projects
- C4: High Point Urban Area MPO 2012-2018 TIP
- C5: Winston-Salem Urban Area MPO 2035 LRTP Projects
- C6: Winston-Salem Urban Area MPO 2012-2018 TIP
- C7: Burlington-Graham Urban Area MPO 2035 LRTP Projects
- C8: Burlington-Graham Urban Area MPO 2012-2018 TIP
- C9: Davidson County STIP
- C10: Statewide STIP

Appendix D: CMAQ Projects

Appendix E: MOVES2010b Emissions

Full MOVES2010b Emissions Computer Run files can be obtained by request from the NC Division of Air Quality from Todd Pasley, Environmental Engineer
Phone: 919-707-8713, and PART from Scott Rhine 336-662-0002

Appendix F: VMT and Speeds

Appendix G: Emissions Analysis Results by County

Appendix H: Public Participation Policies / Advertising Affidavits *(This will be added to the CDR in January 2013)*

Appendix I: Public Comments and Responses *(This will be added to the CDR in January 2013)*

Appendix J: Agency Comments and Responses *(This will be added to the CDR in January 2013)*

Appendix K: MPO TAC Conformity Determination Resolutions

(2035 LRTPs, 2012-18 TIP) *(This will be added to the CDR in January 2013)*

- Greensboro MPO 2035 LRTP and 2012-18 MTIP
- High Point MPO 2035 LRTP and 2012-18 MTIP
- Winston Salem 2035 LRTP and 2012-18 MTIP
- Burlington-Graham 2035 LRTP and 2012-18 MTIP

Appendix L: MPO TAC 2035 LRTP Adoptions *(This will be added to the CDR in January 2013)*

- Greensboro MPO 2035 LRTP
- High Point MPO 2035 LRTP
- Winston Salem 2035 LRTP
- Burlington-Graham 2035 LRTP

Appendix M: NCDOT Conformity Determinations *(This will be added to the CDR in January 2013)*

- Donut Davidson County

This page intentionally left blank

List of Acronyms

<i>Acronym</i>	<i>Full Term</i>
BGMPO	Burlington-Graham Metropolitan Planning Organization.
Conformity Analysis	Demonstration that when the projects planned in the TIP and LRTP are implemented the area will not exceed allowable motor vehicle emissions thresholds (emissions budgets).
Conformity Finding	Statement that the projects contained in the MTIP are essentially consistent with those listed in the LRTP and that no new Conformity Analysis is needed to account for noted differences.
CMS	Congestion Management System. A program of strategies for monitoring, evaluating, and addressing traffic congestion. Required for Transportation Management Areas.
CMAQ	Congestion Mitigation and Air Quality Program. A federal highway fund category for projects that will improve air quality.
DAQ	Division of Air Quality.
DENR	North Carolina Department of Environment and Natural Resources.
Emissions Budget	See Conformity Analysis.
EIS	Environmental Impact Statement. Federally required environmental study for projects with potentially significant environmental effects.
FHWA	Federal Highway Administration (USDOT)
FCEAD	Forsyth County Environmental Affairs Department.
FTA	Federal Transit Administration (US Department of Transportation)
GUAMPO	Greensboro Urban Area Metropolitan Planning Organization.
HPMPO	High Point Metropolitan Planning Organization.
LRTP	Long Range Transportation Plan: 25 year planning document identifying long and short term transportation investment needs.
MAB	Metropolitan Area Boundary. The boundary of the area within the transportation planning jurisdiction of an MPO.
MPO	Metropolitan Planning Organization.
MTIP	Metropolitan Transportation Improvement Program.
MVEB	Motor Vehicle Motor vehicle emission budgets.

List of Acronyms (cont'd)

NCDOT	North Carolina Department of Transportation.
NEPA	National Environmental Policy Act. Federal law that requires consideration of environmental impacts for all major expenditures of federal funds.
NO _x	Oxides of Nitrogen: key precursor to smog. According to NCDAQ, roadway sources produce around 31% of total NC NO _x emissions.
PART	Piedmont Authority for Regional Transportation.
Prospectus	Document outlining responsibilities and procedures for carrying out the cooperative transportation planning process. Defines ongoing work tasks cited in the Planning Work Program.
Planning Work Program	Accounting document for use of planning grant funds; lists approved activities that these funds may reimburse. The PWP thus guides transportation planning activities for the year.
RPO	Rural Planning Organization. RPOs are partnerships among non-MPO counties, established to provide rural areas a greater voice in state transportation decisions affecting those areas.
Section 104(f) PL	Funds distributed through the Federal Highway Administration for transportation planning tasks.
SIP	State Implementation Plan. The modeling analysis and the state and federal regulations demonstrating that the air in an area will meet National Ambient Air Quality Standards.
STIP	State Transportation Improvement Program
TCM	Transportation Control Measures. Specific projects or programs enumerated in the SIP that are designed to improve air quality are implemented in a timely fashion.
TDM	Travel Demand Model.
TMA	Transportation Management Area: urbanized area over 200,000 in population.
PTRM	Piedmont Triad Regional Model.
US EPA	United States Environmental Protection Agency.
WSMPO	Winston-Salem Metropolitan Planning Organization.

This page intentionally left blank

Conformity Analysis and Determination Report

2035 Long Range Transportation Plans:

- **Burlington-Graham Metropolitan Planning Organization (Guilford County)**
- **Greensboro Urban Area Metropolitan Planning Organization (Guilford County)**
- **High Point Urban Area Metropolitan Planning Organization (Guilford, Davidson and Forsyth Counties)**
- **Winston-Salem Urban Area Metropolitan Planning Organization (Forsyth and Davidson Counties)**

Overview

Transportation Conformity ("conformity") ensures that Federal funding and approval is distributed to those transportation activities that are consistent with air quality goals. Conformity applies to Long Range Transportation Plans (LRTPs), Transportation Improvement Programs (TIPs), and projects funded or approved by the Federal Highway Administration (FHWA) or the Federal Transit Administration (FTA) in areas that do not meet or previously have not met air quality standards for ozone, carbon monoxide, particulate matter, or nitrogen dioxide.

These areas are known as "nonattainment areas" or "maintenance areas," respectively. A conformity determination demonstrates that the total emissions projected for a plan or program are within the emissions limits ("budgets") established by the air quality plan or State Implementation Plan (SIP) for air quality, and that transportation control measures (TCMs) – specific projects or programs enumerated in the SIP that are designed to improve air quality – are implemented in a timely fashion.

Conformity Determination

Regional emissions are estimated based on highway and transit usage according to LRTPs and TIPs. The projected emissions for the LRTPs and the TIPs must not exceed the emissions limits (or "budgets") established by the SIP. Where TCMs are included, responsible Metropolitan Planning Organizations (MPOs) and the North Carolina Department of Transportation (NCDOT) are required to demonstrate that TCMs are implemented in a timely fashion to obtain conformity.

The Decision Process

A formal interagency consultation process involving the Environmental Protection Agency (EPA), FHWA, FTA and State and Local transportation and air quality agencies is required in developing SIPs, TIPs, LRTPs, and in making conformity determinations. MPO policy boards make initial conformity determinations in metropolitan areas, while NCDOT makes this determination in areas outside of MPOs, in consultation with affected Rural Planning Organizations (RPOs).

Five organizations are responsible for making the conformity determinations in five distinct parts of the Triad Maintenance Area:

- a. the Burlington-Graham Urban Area MPO (BGMPO) within its portion of the metropolitan area boundary in Guilford County;
- b. the Greensboro Urban Area MPO (GUAMPO) within the metropolitan area boundary of Guilford County;
- c. the High Point Urban Area MPO (HPMPO) within its metropolitan area boundary part in Guilford, Davidson and Forsyth Counties;
- d. the Winston-Salem Urban Area MPO (WSMPO) within its portion of the metropolitan area boundary in Forsyth and Davidson Counties
- e. the NCDOT in the rural (donut) areas that is comprised of those county portions of Davidson that remain outside of any MPO metropolitan area boundary.

Each of these responsible organizations must make a conformity determination for its respective area in order for all of the areas to be designated in conformity.

Conformity determinations must also be made at the Federal level by FHWA and FTA. These determinations must be made at least every four years, or with the updating of LRTPs or TIPs, or within one year of the effective date of a non-attainment designation.

Conformity analysis is made available to the public as part of the MPO and/or State DOT planning processes. MPOs are required to make LRTPs, TIPs, and conformity determinations available to the public, accept and respond to public comments, and provide adequate notice of relevant public meetings. Project sponsors of specific transportation projects within the LRTPs and TIPs must also include appropriate public involvement during project development.

Emissions Budget

The SIP places limits on emissions of each pollutant for each source type (mobile, stationary, and area sources). Projected emissions from highway and transit usage must be less than or equal to the emissions limits for on-road mobile vehicles that are established by the SIP. These emissions limits for motor vehicle emissions sources are called "budgets." Budgets are developed as part of the air quality planning process by State air quality/environmental agencies, and approved by EPA. Transportation agencies participate in this process.

Transportation Control Measures (TCMs)

Areas can include TCMs in their SIPs. TCMs are specific programs designed to reduce emissions from transportation sources by reducing vehicle use or changing traffic flow or congestion conditions. These programs can include:

- developing high occupancy vehicle (HOV) facilities
- ordinances to promote non-motor vehicle travel
- transit improvements
- signal timing
- bicycle and pedestrian facilities
- land use planning

Executive Summary

The purpose of this report is to comply with the provisions of the Clean Air Act Amendments of 1990 and the Moving Ahead for Progress in the 21st Century Act (MAP-21) of July 6, 2012. This report demonstrates that the activities resulting from the implementation of the fiscally constrained long-range transportation plans (LRTPs) will not “cause or contribute to any new violation of any standard in any area, increase the frequency or severity of any existing violation of any standard in any area, or delay timely attainment of any standard or any required interim emission reductions or other milestones in any area.” of the following jurisdictions:

- The portion of Guilford County within the Burlington-Graham Urban Area Metropolitan Planning Organization (BGMPO)
- The portions of Guilford County within the Greensboro Urban Area Metropolitan Planning Organization (GUAMPO)
- The portions of Guilford, Davidson and Forsyth Counties within the High Point Urban Area Metropolitan Planning Organization (HPMPO)
- The portions of Forsyth and Davidson Counties within the Winston-Salem Urban Area Metropolitan Planning Organization (WSMPO)
- The portions of Davidson County outside the MPO boundary that are in the Triad Maintenance Area.

This conformity determination is based on a regional emissions analysis that uses the transportation network approved by the above-named Metropolitan Planning Organizations (MPOs) for the 2035 LRTPs, VMT and Speed input data developed by NCDOT, and emissions developed by the North Carolina Division of Air Quality (NCDAQ).

Based on this analysis, the 2035 LRTPs for the Piedmont Triad Region (BGMPO, GUAMPO, HPMPO, WSMPO and the relevant county portions of Davidson) are consistent with the intent of conformity requirement. The conformity analysis for the relevant portion of the Piedmont Triad Rural Planning Organization (RPO) during the TIP years is specifically addressed by the North Carolina Department of Transportation (NCDOT). The NCDOT’s analysis also shows the TIPs conform to the purpose of the North Carolina SIP (or less than baseline emissions where no SIP budgets have been approved or found adequate).

The USEPA designated Forsyth County for carbon monoxide (CO) as defined by the EPA. The 1990 Clean Air Act Amendments (CAAA) designated these areas as moderate non-attainment area for CO. However, due to improved monitoring data, this area was redesignated as maintenance for CO on November 7, 1994.

The USEPA designated Davidson and Guilford Counties, in their entirety, as a non-attainment area for the 1997 PM 2.5 Standard with an effective date of April 5, 2005. This area was redesignated from non-attainment to maintenance for the 1997 PM 2.5 Standard effective on December 19, 2011.

The Triad Area LRTPs have the following horizon years: 2015, 2021, 2025 and 2035. Each analysis year includes anticipated population, employment data, and roadway projects that are expected open. The LRTPs are fiscally constrained meaning that funding sources for roadway projects are identified.

NCDENR-DAQ prepared base and future emission rates for the MOVES2010b model. These rates were applied to VMT from the Piedmont Triad Regional Model (PTRM) and the non modeled area spreadsheet. There are State Implementation Plan (SIP) motor vehicle motor vehicle emission budgets (MVEB) for the PM 2.5 and CO standards.

Table 1 summarizes the conformity requirements of 40 CFR Part 51 and 93 and gives the status of the LRTPs in relation to each of these requirements. Table 2 contains results from the regional emissions analysis for the Triad Maintenance Area (Davidson, Guilford, and Forsyth Counties). In every horizon year for every pollutant in each geographic area, the emissions expected from the implementation of the LRTP and TIP are less than the emissions budgets established in the SIP. Table 4 contains a cross-reference index for the report.

Table 1. Status of Conformity Requirements

Criteria (√ indicates the criterion is met)	Burlington -Graham MPO	Greensboro MPO	Forsyth MPO	High Point MPO	Rural County Portion of Davidson
Less Than Emissions Budget(s)	√	√	√	√	√
TCM Implementation	N/A	N/A	N/A	N/A	N/A
Interagency Consultation	√	√	√	√	√
Latest Emissions Model	√	√	√	√	**
Latest Planning Assumptions	√	√	√	√	√
Fiscal Constraint	√	√	√	√	√

** Non modeled area analysis spreadsheet was used

Table 2. Emissions Comparison Summaries

Forsyth County Emissions Comparison Summary

CO: Current CO SIP (tons/day)			
Area			
	2015	2025	2035
FORSYTH MVEB (CO)	247.64	247.64	247.64
FORSYTH Emission Model Results	177.68	133.39	137.39

Guilford County Emissions Comparison Summary
and
Davidson County Emissions Comparison Summary

PM 2.5 (NO_x): The PM 2.5 Redesignation Effective 12/19/11 (kg/year)				
Area	Comparison Year			
	2015	2021	2025	2035
GUILFORD MVEB (NO_x)	11,133,605	6,309,650	6,309,650	6,309,650
GUILFORD Emission Model Results	6,137,940	4,178,070	3,638,970	3,156,990
DAVIDSON MVEB (NO_x)	4,086,413	2,148,938	2,148,938	2,148,938
DAVIDSON Emission Model Results	2,541,190	1,573,961	1,291,697	1,004,338

PM 2.5 (PM 2.5): The PM 2.5 Redesignation Effective 12/19/11 (kg/year)				
Area	Comparison Year			
	2015	2021	2025	2035
GUILFORD MVEB (PM 2.5)	421,841	421,841	421,841	421,841
GUILFORD Emission Model Results	192,030	140,714	134,387	137,717
DAVIDSON MVEB (PM 2.5)	153,313	153,313	153,313	153,313
DAVIDSON Emission Model Results	82,731	52,694	47,009	43,245

Table 4. Cross-reference Index	
Conformity Determination Report for the Long-Range Transportation Plan in the Triad Urban Area Non-Attainment/Maintenance Area	
Conformity Requirement – Federal Register	Appendix A
Formal findings of conformity.	to be added
Table of Contents.	iii
The purpose of this report is to comply with the requirements of the CAAA, MAP-21, and 40 CFR 51 and 93.	p. 3
The former and current classification of the air shed and the pollutants for which the air shed was classified as non-attainment/maintenance.	p. 9
The date the region was designated non-attainment/maintenance under the PM 2.5 standard.	p. 13
The emissions expected from implementation of the long-range plan are equal to, or less than, the base year emissions generated	p. 13
The adopted long-range plan is fiscally constrained (§93.108).	p. 13
The latest planning assumptions were used in the conformity analysis (§93.110).	p. 13 Appendix B
The latest emissions model was used in the conformity analysis (§93.111).	p. 20
The list of federally funded T.C.M. activities included. (§93.113).	NA
Conformity determined according to §93.105 and the adopted public involvement procedures.	p. 25
Dates of the Technical Coordinating Committee reviews of the conformity determination and the recommendation.	to be added
SIP emissions budget test or baseline comparison demonstrates conformity of the adopted long-range transportation plan.	p. 22
Listing of projects in each analysis year (highway).	Appendix C
VMT & Summary	p. 18, Appendix F
Analysis of “rural area” projects.	Appendix G
Off-model analysis performed.	Appendix G
Significant comments of reviewing agencies addressed by the MPO, or a statement that no significant comments were received.	Appendix B
Emissions Calculations.	Appendix E
MOVES2010b input files.	Appendix E

Conformity Analysis and Determination Report

2035 Long Range Transportation Plans:

- **Burlington-Graham Metropolitan Planning Organization (Guilford County)**
- **Greensboro Urban Area Metropolitan Planning Organization (Guilford County)**
- **High Point Urban Area Metropolitan Planning Organization (Guilford, Davidson and Forsyth Counties)**
- **Winston-Salem Urban Area Metropolitan Planning Organization (Forsyth and Davidson Counties)**

Projects from the FY 2012-2018 Transportation Improvement Program:

- **The portions of Davidson County that are within the Triad Maintenance Area but outside the Metropolitan Planning Organization Areas**

1 Introduction

The Clean Air Act requires the United States Environmental Protection Agency (USEPA) to set limits on how much of a particular pollutant can be in the air anywhere in the United States. National Ambient Air Quality Standards (NAAQS) are the pollutant limits set by the USEPA; they define the allowable concentration of pollution in the air for six different pollutants – Carbon Monoxide, Lead, Nitrogen Dioxide, Particulate Matter, Ozone, and Sulfur Dioxide.

The Clean Air Act specifies how areas within the country are designated as either “attainment” or “non-attainment” of an air quality standard, and provides USEPA the authority to define the boundaries of non-attainment areas. For areas designated as non-attainment for one or more NAAQS, the Clean Air Act defines a specific timetable to attain the standard and requires that non-attainment areas demonstrate reasonable and steady progress in reducing air pollution emissions until such time that an area can demonstrate attainment. Each state must develop and submit a State Implementation Plan (SIP) that addresses each pollutant for which it fails to meet the NAAQS. Individual State air quality agencies are responsible for defining the overall regional plan to reduce air pollution emissions to levels that will enable attainment and maintenance of the NAAQS. This strategy is articulated through the SIP.

In North Carolina, the agency responsible for SIP development is the North Carolina Division of Air Quality (NCDAQ). The delineation and implementation of strategies to control emissions from on-road mobile sources is a significant element of the state plan to improve air quality, thereby creating a direct link between transportation and air quality planning activities within a non-attainment area. The process of ensuring that a region’s transportation planning activities contribute to attainment of the NAAQS, or “conform” to the purposes of the SIP, is referred to as transportation conformity. In order to receive federal transportation funds within the non-attainment area, the area must demonstrate through a federally mandated conformity process that the transportation investments, strategies and programs, taken as a whole, contribute to the air quality goals defined in the state air quality plan.

In order to ensure the conformity requirements are met, Section 176 (c) of the Clean Air Act authorizes the USEPA Administrator to “promulgate criteria and procedures for demonstrating and assuring conformity in the case of transportation plans, programs, and projects.” This is accomplished through the Transportation Conformity Rule; developed by the USEPA to outline all federal requirements associated with transportation conformity. The Transportation Conformity Rule in conjunction with the Metropolitan Planning Regulations direct transportation plans and program development as well as the conformity process.

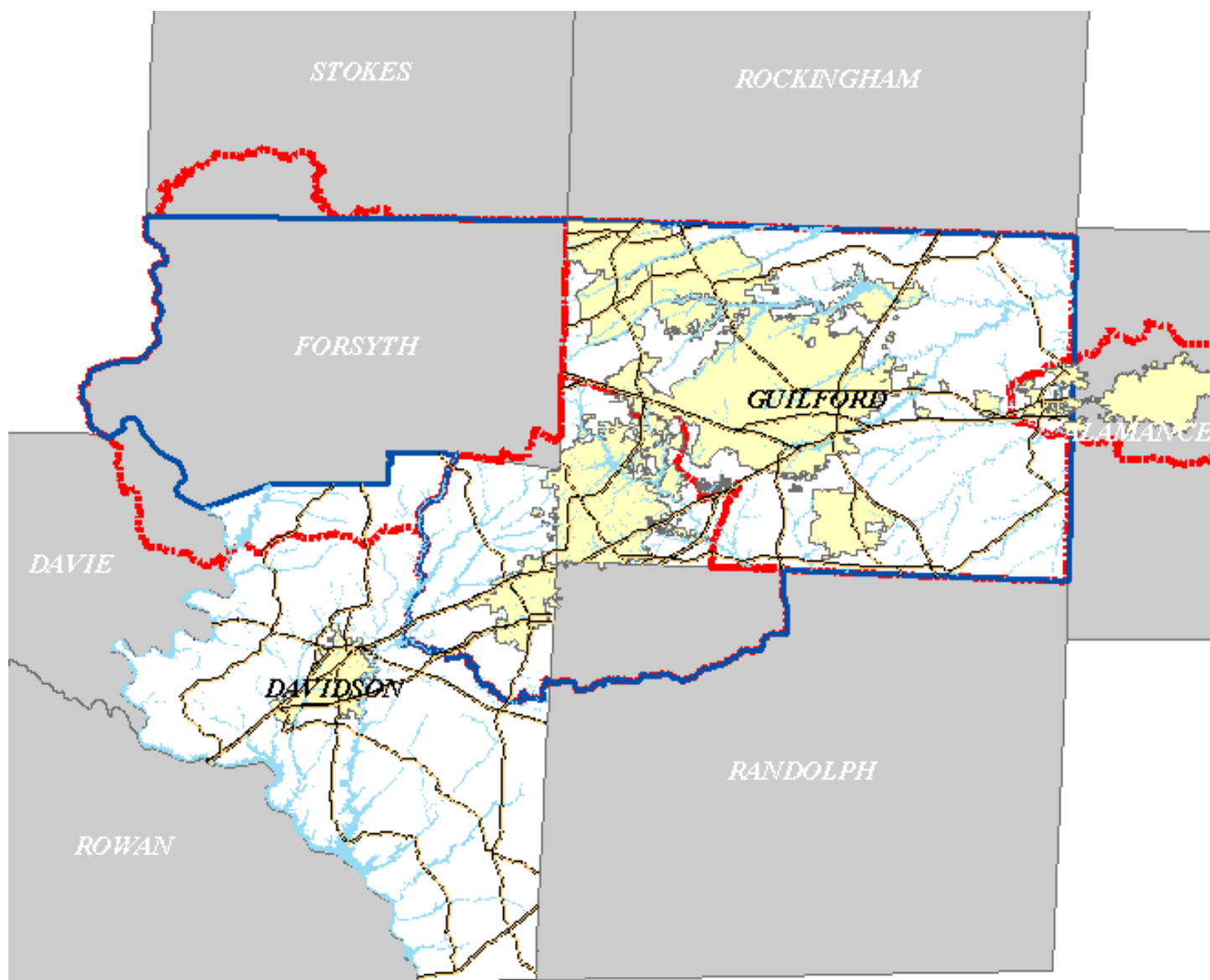
The purpose of this report is to comply with the provisions of the Clean Air Act Amendments of 1990 and the Moving Ahead for Progress in the 21st Century Act (MAP-21) of July 6, 2012. This report demonstrates that the activities resulting from the implementation of the fiscally constrained LRTPs and the TIPs will not “cause or contribute to any new violation of any standard in any area, increase the frequency or severity of any existing violation of any standard in any area, or delay timely attainment of any standard or any required interim emission reductions or other milestones in any area.” The following jurisdictions apply:

- The portion of Guilford County within the Burlington-Graham Urban Area Metropolitan Planning Organization (BGMPO)
- The portion of Guilford County within the Greensboro Urban Area Metropolitan Planning Organization (GUAMPO)
- The portions of Guilford, Davidson and Forsyth Counties within the High Point Urban Area Metropolitan Planning Organization (HPMPO)
- The portions of Forsyth and Davidson Counties within the Winston-Salem Urban Area Metropolitan Planning Organization (WSMPO)
- The county portions of Davidson outside the MPO boundary that are in the Triad Non-Attainment/Maintenance Areas.

This conformity determination is based on a regional emissions analysis that uses the transportation network approved by the above-named Metropolitan Planning Organizations (MPOs) for the 2035 LRTPs, VMT and Speed input data developed by PART in coordination with NCDOT, and emissions developed by the North Carolina Division of Air Quality (NCDAQ). The Triad Maintenance Area for Guilford, Forsyth and Davidson Counties for the CO and PM 2.5 standard are shown as a map on Figure 1.

All Federally funded projects in areas designated by the United States Environmental Protection Agency (USEPA) as air quality non-attainment or maintenance areas must come from a conforming long-range transportation plan and transportation improvement program (TIP). Triad MPO non-attainment and maintenance areas are required by 23 CFR 134 and 40 CFR 51 and 93 to make a conformity determination on any adopted or amended fiscally constrained long-range transportation plan and related TIP. In addition, the United States Department of Transportation (USDOT), specifically, the Federal Highway Administration (FHWA) must make a conformity determination on four MPO Plans in the Triad region and the related TIPs for the maintenance areas.

Figure 1A. Triad Area PM 2.5 Maintenance Area



Legend

- Triad PM 2.5 Non Attainment Area
- MunicipalBoundaries_polys selection selection
- Triad Modeled Area boundary
- MPO Boundaries
- Surrounding County Boundaries
- Streams and Rivers

Figure 1 B. State of North Carolina CO Maintenance Areas

North Carolina CO Maintenance Areas



□ CO Attainment
■ Maintenance

Forsyth County was Redesignated Nov, 1994
Redesignation was projected Sept. 18, 1995
for Mecklenburg, Durham and Wake Counties

Note: Not to Scale
April 6, 2004

In order to assist the Triad Area in making a conformity determination on the adopted 2035 fiscally constrained LRTPs, the following agencies shared leading roles composing substantial portions of this document:

Table 5.

<i>Agency</i>	<i>Counties</i>
Burlington-Graham MPO	Guilford (part)
Greensboro MPO	Guilford (part)
High Point MPO	Guilford (part) , Davidson (part) and Forsyth (part)
Winston-Salem MPO	Forsyth and Davidson (part)
NCDOT	Forsyth, Davidson and Guilford

This analysis is consistent with the set of amendments to 40 CFR Part 93. Based on the regional emissions emission budget test documented in this report, the following LRTPs conforms to the purpose of the North Carolina SIP:

- Greensboro Urban Area MPO 2035 LRTP & 2012-2018 TIP Projects
- High Point Urban Area MPO 2035 LRTP & 2012-2018 TIP Projects
- Winston-Salem Urban Area MPO 2035 LRTP & 2012-2018 TIP Projects
- Burlington-Graham Urban Area MPO 2035 LRTP & 2012-2018 TIP Projects
- Donut Portions of Davidson 2012-2018 TIP Projects outside of the MPO boundaries

This report documents the regional emissions budget test, interagency consultation process, public involvement process, and analysis methodology used to demonstrate transportation conformity for each MPO and the donut portion of each county outside the MPOs.

40 CFR Part 93 requires that a conforming transportation plan satisfy five conditions:

- The transportation plan must be consistent with the motor vehicle emissions budget(s) in an area where the applicable implementation plan or implementation plan submission contains a budget (*40 CFR Part 93.118*).
- The transportation plan, TIP, or FHWA/FTA project not from a conforming plan must provide for the timely implementation of TCMs from the applicable implementation plan (*40 CFR Part 93.113b*).
- The MPO must make the conformity determination according to the consultation procedures of *40 CFR Part 93.105* and the implementation plan revision required by *40 CFR Part 93.390* (*40 CFR Part 416*).
- The conformity determination must be based on the latest emissions estimation model available (*40 CFR Part 93.111*).
- The conformity determination must be based on the latest planning assumptions (*40 CFR Part 93.110*).
- The transportation Plan, TIP, or FHWA/FTA project must meet the interim emissions tests where applicable (*40 CFR Part 93.119*).

This report shows that the MPOs 2035 LRTPs and the projects from the 2012-18 STIPs in the donut areas outside of the MPO boundaries meets each condition. Each condition is discussed in the following sections of this report.

2 Air Quality Planning

The USEPA designated Forsyth County for carbon monoxide (CO) as defined by the EPA. The 1990 Clean Air Act Amendments (CAAA) designated these areas as moderate non-attainment area for CO. However, due to improved monitoring data, this area was re-designated as maintenance for CO on November 7, 1994.

The USEPA designated Davidson and Guilford Counties, in their entirety, as a non-attainment area for the PM 2.5 Standard with an effective date of April 5, 2005. This area was re-designated from non-attainment to maintenance for the 1997 PM 2.5 Standard effective on December 19, 2011.

The Federal Register notices containing the SIP MVEBs for each designated pollutant for the Triad Area is provided in Appendix A.

2.1 Emissions Budget

For the PM 2.5 and CO standard there are approved SIP MVEBs and comparisons will be made to the MVEBs to demonstrate conformity.

Section 4 of this report provides the regional emissions analysis and comparisons to the MVEBs where applicable.

Table 6: Motor Vehicle Emission Budgets

Forsyth County is maintenance for the Carbon Monoxide (CO) standard. A MVEB was established for 2015 and emission limits based on the MVEB is indicated below:

CO: Current CO SIP (tons/day)						
Area	Comparison Year					
	2007	2010	2012	2015	2025**	2035**
Forsyth	NA	NA	NA	247.64	247.64	247.64

PM 2.5 (NO _x): The PM 2.5 Redesignation Effective 12/19/11 (kg/year)				
Area	Comparison Year			
	2015	2021	2025	2035
GUILFORD MVEB (NO _x)	11,133,605	6,309,650	6,309,650	6,309,650
DAVIDSON MVEB (NO _x)	4,086,413	2,148,938	2,148,938	2,148,938

PM 2.5 (PM 2.5): The PM 2.5 Redesignation Effective 12/19/11 (kg/year)				
Area	Comparison Year			
	2015	2021	2025	2035
GUILFORD MVEB (PM 2.5)	421,841	421,841	421,841	421,841
DAVIDSON MVEB (PM 2.5)	153,313	153,313	153,313	153,313

***The MVEB for 2015 will be used for the 2025 and 2035 comparison since 2015 is the last year that a MVEB is provided for VOC and NO_x*

3 Long Range Transportation Plans

Federal law *40 CFR part 93.104(b)(3)* requires a conformity determination on LRTPs no less frequently than every four years. As required in *40 CFR 93.106*, the horizon years for the LRTPs are no more than ten years apart.

The BGMPO includes a small portion Guilford County. The GUAMPO includes the majority portion of Guilford County. The HPMPO includes portions of Guilford, Davidson, and Forsyth Counties. WSMPO includes Forsyth and a portion of Davidson County. The remaining portions of the maintenance area is the donut areas of Davidson County outside of the MPO boundaries.

3.1 Consultation

The 2035 LRTP is consistent with consultation requirements discussed in *40 CFR 93.105*.

Consultation on the development of this conformity determination was accomplished through interagency consultation meetings held on 3/23/12, 4/20/12, 5/18/12, 6/15/12, 7/20/12, 8/17/12, 9/21/12, and 10/19/12. A summary of the topics discussed and a list of the attendees at each of these meetings is included in Appendix B.

3.2 Financial Constraint Assumptions

The LRTPs are fiscally constrained as discussed in *40 CFR 93.108*. The Greensboro Urban Area MPO, the High Point Urban Area MPO, the Winston-Salem Urban Area MPO and the Burlington-Graham LRTPs are fiscally constrained to the year 2035. All projects included in the 2012-2018 TIPs are fiscally constrained, and funding sources have been identified for construction and operation. The estimates of available funds are based on historic funding availability and include federal, state, private, and local funding sources. Additional detail on fiscal constraint is included in each MPO LRTP. It is assumed that the projects listed for each horizon year will be completed and providing service by the end of the indicated calendar year (December 31). These transportation networks are described in the respective 2035 LRTPs. They are also described in greater detail in Appendix C.

3.3 Latest Planning Assumptions

The 2035 LRTPs were developed with the latest planning assumptions as discussed in *40 CFR 93.110*. The Piedmont Travel Demand Model (PTRM) was developed by NCDOT, Triad MPOs, and PART for the urbanized portion of the Triad non-attainment area. The MPOs provided housing, employment, and population projections, and a set of highway and transit projects consistent across jurisdictional boundaries was developed through regional MPO coordination. Additional detail on these planning assumptions is provided below.

Land use and demographic data were collected by regional planning agencies and staff members of BGMPO, GUAMPO, HPMPO and WSMPO. A regional methodology was agreed upon that included updating residential and employment data to the end of 2009, and preparing growth forecasts to 2035.

Residential data included population, dwelling units, households, median income and university-related group quarters population (dormitories, fraternities and sororities). Residential data was

based on Census 2000 data from Summary File 1, except that median income data was based on the Census Transportation Planning Package part 1.

Forecasts were prepared by local planning department staff with guidance from staff at the four MPOs. A regional methodology was applied to maintain consistency between residential and employment forecasts and adopted land use plans. Data and forecasts were submitted for public review by each MPO, and adopted for use in developing travel demand and air quality forecasts by each MPOs Transportation Advisory Committee. Additional detail of arriving at these planning assumptions can be found in Appendix B for the Triad Transportation Conformity Consensus Plan.

The Piedmont Triad Regional Model (PTRM) uses the basic four-step process (trip generation, trip distribution, mode choice and assignment). All four steps of the process are discussed in greater detail in the sections below.

The PTRM TransCAD model was developed by the PTRM Model Team, and adopted by the Executive Committee, and is housed at PART. The PTRM TransCAD model covers the contiguous boundaries of Guilford and Forsyth Counties (including the portions within the BG MPO) and a portion of Davidson County (including the portion within the HPMPO, and WSMPO)

Outside of the modeled area, NCDOT utilizes a spreadsheet that incorporates the vehicle-miles traveled (VMT) universe file and historical trends to project the VMT in future years at the county level. The spreadsheet calculates speed based on a model originally developed by the Texas Transportation Institute (TTI) but modified by NCDOT. Speeds generated by the spreadsheet are incorporated into the MOVES2010B model. Then emissions are generated. The rural spreadsheet model is used for the donut area of Davidson and is factored based on population percentage for those portions of non-attainment counties not covered by the PTRM TransCAD model. This methodology has been used to demonstrate conformity in other areas and has received approval from interagency partners.

There are no court orders or special agreements that apply to conformity (*40 CFR 93.109*).

3.4 Future Year Roadway Projects

Roadway improvements used for conformity modeling were developed in the 2035 LRTP process in each MPO. Outside of the MPO boundaries, TIP projects from the 2012-2018 TIP served as the future year roadway projects. For the 2035 LRTPs, lists of needed projects were developed based on modeled congestion and identified local needs. Improvements were coded into the TDM and analyzed. Intermediate analyses for the years 2015, 2021 and 2025 were performed to assist in prioritizing the 2035 roadway needs. The final 2015, 2021, 2025 and 2035 networks are fiscally constrained. Projects were added from MPO priority lists until estimated project costs equaled the expected funding available. The base network (2012) and the four future networks (2015, 2021, 2025, and 2035) used for the conformity determination are the same as the networks used for the 2035 LRTPs. Throughout the process to develop the roadway networks, the MPOs and NCDOT identified any initial inconsistencies in project timing and characteristics (e.g. cross-section) for those projects crossing jurisdictional boundaries and reached consensus on consistent solutions.

Figure 2. Regional Significance

The following criteria is used to identify major existing and future regional roadway systems that may produce significant impacts to air quality emissions with respect to the Triad region.

Regional Significance Criteria

1. The facility serves regional transportation needs (i.e. facilities that provide access to and from the region or that provide access to major destinations in the region);
2. The facility is functionally classified higher than a minor arterial (minor arterials may be regionally significant if their main purpose is to provide access to major facilities in the region);
3. The facility is a fixed guideway transit facility; and
4. The facility is included in the travel model for the region (In many cases collector streets are modeled that are not regionally significant).

To be regionally significant a facility should meet one or more of the criteria in this checklist. 40 CFR Part 93.101

Appendix C includes lists of the future year roadway projects in the Triad area as indicated below, including indications of which projects are regionally significant and which projects are exempt.

Table 7.

Area	Roadway Project List Appendix C
Greensboro Urban Area MPO	2035 LRTP (Appendix C1) 2012-2018 TIP (Appendix C2)
High Point Urban Area MPO	2035 LRTP (Appendix C3) 2012-2018 TIP (Appendix C4)
Winston-Salem Urban Area MPO	2035 LRTP (Appendix C5) 2012-2018 TIP (Appendix C6)
Burlington-Graham MPO	2035 LRTP (Appendix C7) 2012-2018 TIP (Appendix C8)
NCDOT (Donut Portion of Davidson)	2012-2018 TIP (Appendix C9 and C10)

The exempt projects listed in Appendix C, both highway and transit, will serve as the LRTPs/TIPs for the region in the event of a conformity lapse. A conformity lapse is when an area develops a LRTP that does not pass the conformity test or a conformity update deadline is missed. The TAC must adopt a LRTP of exempt projects (*40 CFR 93.126, 127 & 128*) that will serve as the LRTP/TIP for the area in the event of conformity lapse.

3.5 Transit Networks

As with the roadway projects, each MPO developed transit projects for its LRTP. The base year network was modeled from existing routes and fares for the transit systems in 2012. Future year networks were based on fiscally-constrained projected new or expanded services from regional

transit plans, local bus system short range plans, corridor transit plans and other projected bus service expansion estimates, where available. As with the roadway networks, the MPOs and NCDOT identified and rectified any initial inconsistencies in project characteristics or implementation years where transit projects crossed jurisdictional boundaries.

Table 8.

Area	Transit Project List Appendix C
Greensboro Urban Area MPO	2035 LRTP (Appendix C1)
High Point Urban Area MPO	2035 LRTP (Appendix C3)
Winston-Salem Urban Area MPO	2035 LRTP (Appendix C5)
Burlington-Graham MPO	2035 LRTP (Appendix C7)
NCDOT (Donut County portion of Davidson)	2012-2018 TIP (Appendix C9 and C10)

3.6 Congestion Mitigation/Air Quality (CMAQ) Projects

The NC Department of Transportation has established an allocation and review process for CMAQ projects. Each MPO and RPO in a non-attainment or maintenance area receives an allocation of CMAQ funds based on population and air quality status. In addition, a statewide pool of CMAQ funds will be allocated to projects serving more than one non-attainment area on a competitive basis. MPO and RPO project priorities and project applications for statewide funding is reviewed on an annual basis. This conformity report includes a listing of funded CMAQ projects in the Triad Area in Appendix D, for those projects within the non-attainment/maintenance areas.

3.7 Travel Demand Model:

Vehicle Miles Traveled (VMT) and speeds used in the emission estimation process are generated by the Piedmont Triad Regional Model (PTRM) and the NCDOT Non-Modeled Area Analysis (NMAA). The PTRM is housed at PART and the NMAA is housed at NCDOT.

The PTRM completely covers the Metropolitan Area Boundaries (MABs) for the WSMPO (Forsyth, Davidson), the HPMPO (Davidson, Guilford and Forsyth), the GUAMPO (Guilford) and the BGMPO (Alamance, Guilford and Orange). Alamance, Guilford and Forsyth counties are completely within the Piedmont Triad Regional Model (PTRM) boundary. Davidson County is partially covered by the PTRM and the remainder of the county will be covered using the NCDOT NMAA spreadsheet, a methodology based on estimating VMT for non-modeled areas according to population percentages for those portions of non-attainment or

maintenance counties. This methodology has been used to demonstrate conformity in other areas and received approval from the interagency partners.

The NMAA incorporates travel and road-miles data from the NC Road Characteristics File, historical VMT trends and projected populations in the modeled and non-modeled areas, to project VMT to the horizon years at the county level, and calculates speeds based on a model originally developed by the Texas Transportation Institute (TTI), modified by NCDOT. North Carolina records AADT data for all roads on all functionally-classified routes. However, historically only 75% of all road mileages were covered by actual counts. Up until 2009, an Annual Average Daily Traffic (AADT) count of 400 vehicles per day was assumed for all local roads in the State that did not have counts. Since 2009, NCDOT now provides count data and AADT coverage and resulting VMT estimates for 100% of all functionally classified routes in the state, and estimates local VMT using a county-based average AADT.

In addition to the improved methodology based on county-specific local-road AADT, county road-mile and VMT estimates have been expanded to include non-functionally-classified local roads which had not previously been inventoried. These changes resulted in some discontinuities in the basis and overall results of the estimation processes, which will require an adaptation of the historic NMAA procedures for VMT projection, until an adequate historic record of estimates using the new methodology is available. In the meantime, it was determined that the most reasonable way to project VMT with these available data is to (1) project the historic trend in VMT growth from the 1999 – 2008 period using an ordinary least squares linear regression extrapolation, and (2) to apply that growth rate to “new method” VMT estimates for 2010 and 2011 to project VMT for the NMAA horizon years. This projection is based on total VMT (including rural and urban road types), which compensates for the reclassification of VMT from year to year due to the expansion of urbanized boundaries or other reasons. The regression analysis determines the correlation of data and predicts total VMT values for the specific years of interest. Finally, the distribution of 2011 VMT by functional class is used to disaggregate projected county-total VMTs. Results were evaluated for reasonable growth and consistency. The basic VMT projection methodology was based on the EPA document Section 187, VMT Forecasting and Tracking Guidance, January 1991.

Forecasted speeds and VMT generated by the PTRM and the NMAA spreadsheet are incorporated into the EPA MOVES2010b emissions model, which is used to generate emission inventories for the relevant counties and pollutants

3.8 Mode Split / Mode Choice: Piedmont Triad Regional Model (PTRM)

The PTRM estimates the probability of selecting the entire range of travel modes (excluding freight) for each potential origin and destination in the region, as defined by the regional network and zone system. The mode split model uses a logit formulation to estimate the probability of choosing a particular mode. For the PTRM a total of 23 model alternatives (travel modes) are considered. While not all of these modes are allowed for each purpose, and some await data for calibration, the model structure is designed to accommodate a full range of potential alternatives. The primary or top level alternatives are auto, non-motorized, transit

and school bus. Within each of the primary alternatives considered there are separate nest created for alternative travel patterns; thus creating a total of 23 alternatives.

The PTRM includes the following trip purposes: home-based work, home-based school, home-based shopping, home-based other, Non-home-based work, non-home-based other, home-based college/university, and airport traveler trips.

3.9 Method of Reporting VMT and Speed

The PTRM was developed in 2002 and enhanced most recently in 2012 with 2009 ground counts. After the vehicle trips are assigned, the PTRM must be separated by the designated non-attainment/maintenance region to be analyzed independently.

For each designated non-attainment/maintenance area, the PTRM has the capability to provide daily VMT and Speed output for each fiscally constrained analysis year network corresponding to programmed TIP construction projects and post year construction projects. VMT and average speeds by functional classification derived directly from model link data are essential inputs required to the run the MOVES2010b emissions model.

The VMT for each functional class is then multiplied by emissions factors from the MOVES2010b model (See Appendix E) to determine the total emissions for each fiscally constrained network year. The VMT and Speed data summary are found in Appendix F.

4. Regional Emission Tests

In areas with an USEPA approved attainment demonstration or maintenance plan, an emissions budget comparison satisfies the emissions test requirement of 40 CFR Part 93.118. For pollutants for which an emissions budget has been submitted, the estimated emissions from the transportation plan must be less than or equal to the emissions budget values. Emissions were provided by NCDAQ.

Table 9 illustrates what parts of the Triad Maintenance Area have emissions budgets, what parts are covered by the Piedmont Triad Regional Model (PTRM) and how each part was analyzed for each pollutant in each comparison year.

Two counties in the non-attainment/maintenance area are completely within the TDM boundary (Guilford and Forsyth). Portions of Davidson County are outside of the TDM boundary.

4.0.1. Sub-area motor vehicle emission budgets

All of Guilford, Davidson and Forsyth Counties are maintenance areas under the PM 2.5 and CO standard and have motor vehicle motor vehicle emission budgets (MVEBs) by county.

4.0.2 Emissions analysis source

Vehicle Miles of Travel (VMT) and speeds for the emissions analysis were derived from the PTRM where it is available. VMT and speeds for the portions of Davidson County outside the modeled area came from the NCDOT non-modeled area rural spreadsheet factored by the percentage of each county's population in the rural area, a method that has been used in prior analyses.

Table 9. Triad Area Transportation Conformity Analysis Matrix

County	Area model status	Area emissions budget status	Emissions analysis source						
						2015	2021 (Interpolated between 2015 and 2025)	2025 (modeled)	2035 Horizon (modeled)
Guilford	modeled all	¹ The PM2.5 Redesignation Nonattainment to Attainment Effective 12/19/11	PTRM			NOx Direct PM2.5	NOx Direct PM2.5	NOx Direct PM2.5	NOx Direct PM2.5
Davidson	modeled area	¹ The PM2.5 Redesignation Nonattainment to Attainment Effective 12/19/11	PTRM			NOx Direct PM2.5	NOx Direct PM2.5	NOx Direct PM2.5	NOx Direct PM2.5
	rural area	¹ The PM2.5 Redesignation Nonattainment to Attainment Effective 12/19/11	Non-Modeled Area Analysis Spreadsheet			NOx Direct PM2.5	NOx Direct PM2.5	NOx Direct PM2.5	NOx Direct PM2.5
Forsyth	modeled all	CO	PTRM			CO		CO	CO

Footnotes for table:

¹ The Approval and Promulgation of Implementation Plans and Designation of Areas for Air Quality Planning Purposes; North Carolina: Redesignation of the Greensboro-Winston –Salem-High Point 1997 Annual Fine Particulate Matter Nonattainment Area to Attainment will be referred to in this document as the PM2.5 Redesignation Nonattainment to Attainment Effective 12/19/11.

Additional table notes and explanations:

County:

- ❑ CO: The Triad CO maintenance area consists of one whole county (Forsyth)
- ❑ PM 2.5: The Triad PM 2.5 maintenance area consists of 2 counties (Guilford and Davidson) and one donut area (Davidson)

**Note: a donut area is an area outside the MPO boundary but within the non-attainment/maintenance area.*

4.0.3 Emission comparison years (CO)

Forsyth County has a CO maintenance SIP. The SIP provides a 2015 budget for Forsyth County which is applicable from 2015 onwards. Forsyth County is entirely within the modeled area and has emissions budgets under the SIP; the PTRM was used as the analysis tool. Listed below is specific CO budget and comparison year information:

- SIP Budget Years: 2015 (Forsyth County)
- Comparison Years for CO SIP:
 - 2015 MVEB will be compared to the analysis years of 2015, 2025 and 2035

4.0.4 Emission comparison years (PM 2.5)

Guilford and Davidson County has a PM 2.5 maintenance SIP. The SIP provides a 2015 and 2021 budget.

- SIP Budget Years: 2015 and 2021 (Guilford and Davidson County)
- Comparison Years for PM2.5 SIP:
 - 2015 MVEB will be compared to the analysis years of 2015
 - 2021 MVEB will be compared to the analysis years of 2021, 2025 and 2035

4.1 Emissions Model

MOVES2010b was used to develop the emissions factors. Motor vehicle emission controls considered in the MOVES2010b model include the following:

Strategy

I/M Program
Tier 2 vehicle's Emission Standards
Low Sulfur Gasoline and Diesel fuels
Heavy Duty Vehicle Rules 2004 and 2007
Low RVP Gasoline
On board vapor recovery

Methodology/Approach

Accounted for in MOVES model
Accounted for in MOVES model
Accounted for in MOVES model
Accounted for in MOVES model
Accounted for in MOVES model
Accounted for in MOVES model

Also, area specific information is used for such items as vehicle age distribution and vehicle type distribution rather than national default values, as documented below.

4.1.1 Development of Emissions Factors

The following MOVES2010b model-input parameters will be used in the conformity analysis.

CO Maintenance Area: Forsyth County

PM_{2.5} Maintenance Area: Davidson and Guilford Counties

Parameter	Details	Data Source
a. Emissions Model Version(s):	MOVES2010b	
b. Emission Model Runs:	Typical Winter Weekday (CO) tons/day Annual (NO _x and Direct PM _{2.5}) kilogram/yr	
c. Time Periods:	Daily for CO Annually for NO _x and Direct PM _{2.5}	
d. Pollutants Reported:	CO, NO _x (for PM _{2.5}) and Direct PM _{2.5}	
e. Emissions Budget Years:	CO: 2015 PM 2.5: 2011 & 2021	
f. Emissions Analysis Years:	2015, 2021, 2025, 2035 (interpolate for 2021)	
g. Vehicle Classes:	13	

- h. Temperature and Relative Humidity:** Hourly average temperature and relative humidity calculated for each month. Meteorological data is from the GSO Triad Regional Airport.
- i. VMT Mix:** Statewide mix based on 2009 data using the method in the August 2004 USEPA Guidance.
- j. Speeds:** From PTRM and Non-Modeled Area Analysis Spreadsheet
- k. Vehicle Age Distribution:** Based on 2010 vehicle registration data provided by NCDOT.
- l. I/M Program:** 2015, 2021, 2025, 2035: OBD-II for Davidson, Forsyth and Guilford Counties.
- m. Anti-tampering Applicability:** Not included in MOVES
- n. RVP:** Calendar Monthly

	RVP
Jan, Dec	15
Feb, March, April, Oct, Nov	13.5
May	9.0
June, July, Aug, Sept	7.8

- o. Strategies:** See item #12 above
- p. I/M Compliance Factor Coverage (CFC):** *This input to MOVES accounts for the I/M compliance rate, waiver rate, and regulatory coverage adjustment for applicable vehicles. When calculated by MOVES guidance methods this value is 90.25% for passenger cars, 84.84% for passenger trucks, and 79.42% for light commercial trucks for all 3 counties.*
- q. Evaluation Month:** 12 month annual emissions or any part thereof (output can be disaggregated at the user's discretion)
- r. VMT:** PTRM and Non-Modeled Area Analysis Spreadsheet
- s. Diesel Sulfur Content:** MOVES considers all recent rulemakings (Tier 2, ultra low sulfur diesel, etc). The default data in MOVES can be relied on here. Default database values are by month and county and can be requested by the MPO.
- t. Source type (vehicle type) population:** Year-specific vehicle populations, broken down by source type (i.e. passenger cars, light commercial trucks, combination long-haul trucks, etc.) will be developed for each county. These source type population estimates will be based on the latest available (2010 or later) total number of registered

vehicles in each county, obtained from the Office of State Budget and Management (OSBM). Total registered vehicle populations for future years will be projected using certified base and future year human population data, also obtained from OSBM.

$$\text{Future year total vehicle population} = \text{Base year total vehicle population} * \frac{(\text{Future year human population})}{(\text{Base year human population})}$$

MOVES-default source type population distributions for the appropriate county-year will then be applied to the future year total to generate the final source type population data.

4.2 Transportation Control Measures

The North Carolina State Implementation Plan lists no transportation control measures pertaining to the Triad.

4.3 Emissions Comparison Tests by Location and Pollutant

The USEPA designated Forsyth County for carbon monoxide (CO) as defined by the EPA. The 1990 Clean Air Act Amendments (CAAA) designated these areas as moderate non-attainment area for CO. However, due to improved monitoring data, this area was redesignated as maintenance for CO on November 7, 1994.

USEPA approved the second ten-year update of these emissions budgets on September 20, 2004 with an effective date of November 19, 2004. The last year for VOC and NO_x emissions budgets is 2015; therefore, analysis years beyond 2015 were compared to the 2015 emissions budget. The USEPA approval and promulgation rulings for CO and ozone containing the budgets are in Appendix A.

The USEPA designated Davidson and Guilford Counties, in their entirety, as a non-attainment area for the PM 2.5 Standard with an effective date of April 5, 2005. This area was re-designated from non-attainment to maintenance for the 1997 PM 2.5 Standard effective on December 19, 2011.

The maintenance designations cover the following geographic areas:

- Guilford County (PM 2.5)
- Davidson County (PM2.5)
- Forsyth County (CO)

Four organizations are responsible for conformity determinations; each must make a conformity determination for its respective area in order for all of the areas to be designated in conformity:

- the Burlington-Graham Urban Area MPO (BGMPO) within its portion of the metropolitan area boundary in Guilford County;
- the Greensboro Urban Area MPO (GUAMPO) within the metropolitan area boundary of Guilford County;
- the High Point Urban Area MPO (HPMPO) within its metropolitan area boundary in Guilford, Davidson and Forsyth Counties;

- the Winston-Salem Urban Area MPO (WSMPO) within its portion of the metropolitan area boundary in Forsyth and Davidson Counties;
- the NCDOT in donut areas that is comprised of those county portions of Davidson that remain outside the MPO metropolitan area boundary.

Table 11 summarizes the emissions test used and decision-making responsibility for conformity findings in each County.

Table 11. Emissions Test and Responsibility for Conformity Findings

Location	Pollutant(s)	Emissions Test	Conformity Finding Responsibility
Guilford County	PM 2.5	Budget	Greensboro MPO, High Point MPO & Burlington Graham MPO
Davidson County	PM 2.5	Budget	Winston Salem MPO, High Point MPO & NCDOT for donut Davidson County
Forsyth County	CO	Budget	Winston Salem MPO & High Point MPO

The results of the emission comparisons are summarized by County in Tables 18 through 20. Detailed emissions analysis results by county are contained in Appendix G.

Table 18. Forsyth County Emissions Comparison Summary

CO: Current CO SIP (tons/day)			
Area			
	2015	2025	2035
FORSYTH MVEB (CO)	247.64	247.64	247.64
FORSYTH Emission Model Results	177.68	133.39	137.39

Table 19. Guilford County Emissions Comparison Summary

PM 2.5 (NO _x): The PM 2.5 Redesignation Effective 12/19/11 (kg/year)				
Area	Comparison Year			
	2015	2021	2025	2035
GUILFORD MVEB (NO _x)	11,133,605	6,309,650	6,309,650	6,309,650
GUILFORD Emission Model Results	6,137,940	4,178,070	3,638,970	3,156,990

PM 2.5 (PM 2.5): The PM 2.5 Redesignation Effective 12/19/11 (kg/year)				
Area	Comparison Year			
	2015	2021	2025	2035
GUILFORD MVEB (PM 2.5)	421,841	421,841	421,841	421,841
GUILFORD Emission Model Results	192,030	140,714	134,387	137,717

Table 20. Davidson County Emissions Comparison Summary

PM 2.5 (NO_x): The PM 2.5 Redesignation Effective 12/19/11 (kg/year)				
Area	Comparison Year			
	2015	2021	2025	2035
DAVIDSON MVEB (NO_x)	4,086,413	2,148,938	2,148,938	2,148,938
DAVIDSON Emission Model Results	2,541,190	1,573,961	1,291,697	1,004,338

PM 2.5 (PM 2.5): The PM 2.5 Redesignation Effective 12/19/11 (kg/year)				
Area	Comparison Year			
	2015	2021	2025	2035
DAVIDSON MVEB (PM 2.5)	153,313	153,313	153,313	153,313
DAVIDSON Emission Model Results	82,731	52,694	47,009	43,245

5. Public Involvement and Interagency Consultation

The 2035 Transportation Plans are consistent with consultation requirements discussed in *40 CFR 93.105*. Interagency consultation was a cooperative effort on the part of the Burlington-Graham MPO, the Greensboro Urban Area MPO, the High Point Urban Area MPO, the Winston-Salem Urban Area MPO, the Piedmont Triad Area RPO, the North Carolina Department of Transportation, the North Carolina Division of Air Quality, the Environmental Protection Agency, the Federal Transit Administration, and the Federal Highway Administration. The process was administered by the Piedmont Authority for Regional Transportation (PART) on behalf of the partners and was organized according to the sections in the document titled *Triad Region Transportation Conformity*:

Pre-Analysis Consensus Plan, a document agreed to at the initial interagency consultation meeting on February 22, 2012 and updated periodically. Subsequent interagency consultation meetings were held on March 23, 2012, April 20, 2012, May 18, 2012, June 15, 2012, July 20, 2012, August 17, 2012, September 21, 2012 and October 19, 2012. A copy of the latest version of the Consensus Plan, written agency comments and agendas and summaries of the interagency consultation meetings are included in Appendix B.

Public review of this report was handled in accordance with each MPO, PART and RPO public participation policy for the LRTPs. Copies of all public participation policies are included in Appendix H. Comments from the general public participation process and interagency review are incorporated into the final Conformity Analysis and Determination Report. All written comments on the draft report from the general public and interagency review are included in Appendices I and J of the final report.

6. Conclusion

Based on the analysis and consultation discussed above the following transportation plans and TIPs conform to the purpose of the North Carolina State Implementation Plan. In every horizon year for every pollutant in each geographic area, the emissions expected from the implementation of the long-range plans and TIPs are less than the emissions budgets established in the SIP.

Table 17: Summary of Conformity Status of Triad LRTPs

Criteria (√ indicates the criterion is met)	Burlington-Graham MPO 2035 LRTP	Greensboro Urban Area MPO 2035 LRTP	High Point Urban Area MPO 2035 LRTP	Winston-Salem Urban Area MPO 2035 LRTP	Davidson County Donut Area projects from the Davidson County 2012-18 TIP
Less Than Emissions Budget(s) or Baseline	√	√	√	√	√
TCM Implementation	The NC SIP includes no Transportation Control Measures in the Triad Area				
Interagency Consultation	√	√	√	√	√
Latest Emissions Model	√	√	√	√	√
Latest Planning Assumptions	√	√	√	√	√
Fiscal Constraint	√	√	√	√	√

In the final Transportation Conformity Analysis and Determination Report, please refer to the resolutions of conformity finding, approval, and/or endorsement by the metropolitan planning organizations of the Piedmont Triad region in Appendices' K, L and M.